

Analysis of risks and impacts on the incomes of small poultry producers in Ha Tay Province, North – Vietnam

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Keywords: poultry, farming systems, risks of epidemic disease, value-added net, Red River Delta

Introduction

About 8.3 million of rural households in Vietnam (70%) have the poultry production. The income's poultry production represents about 19% of total household (1, 2). In 2007, the quantity of poultry flock in Vietnam has reached about 226 million heads (3), an increase of 5.3% compared to production in 2006, but a diminution of 11% compared to that in 2003. This reduction was caused by an outbreak of the H5N1 virus among poultry, resulting in the culling of millions of birds in 2004 (4). This occurrence had large economical and sociological impacts with an estimated loss of about 3,000 billion Vietnam dong (5). The risk of avian influenza (AI) on the poultry flock was large, particularly on the backyard poultry production systems (6). The Red River Delta (RRD) region has the highest poultry production, contributing to 30% of total national flock (3).

Ha Tay Province plays an important role in the supply of meat to Hanoi City, and supply of chicks/ducks to other provinces. From early 2004, the producers have adapted their production in the context of epidemic of the AI to respond to market demand better. This research aims to analyze the explicative factors of poultry development through an identification of poultry farming systems.

Materials and methods

Selection of surveyed sites: Household farms raising poultry at different production scales in Ha Tay province in the center of the highest poultry production region, RRD were selected. Five communes in two districts were selected basing on the agro-ecological patterns and the diversification of poultry systems. This research was conducted from December, 2008 to August, 2009.

Methods: The research began by the collection of official data of the poultry production from the reports of DLP, FAO, GSO, and the key persons in these zones for better understanding the poultry production in the province.

The various poultry production systems were then identified by the interviews through the stratified sampling method. Over 270 poultry farms and veterinary agents were interviewed, following a structure questionnaire. Information collected allows the characterization of the poultry production (sub-) systems by the scale of breeding.

Financial analysis method is based on the concept of value-added, with the flow of inputs and outputs.

Results and discussion

Typology of poultry production systems

The scale of poultry flock and the type of poultry races are really diversified in each ecological zone. There are four main farming systems characterized by types of production and levels of risks with epidemic disease.

+ **System 1:** Chicken integrated production by a contract between farmers and enterprises with high bio-security level. The enterprises supply the chicks, chickenfeed, vaccines, drugs, technicians. The farmers have to build the hen-house and raise chickens with a good process. The farmers receive their wages according to production results. There are about 6,600 young hens or 18,000 broilers per farm or from 2 to 4 flocks a year. This system is a characteristic of big commercial production with high potential productivity as ISA Brown, Sasso or Cobb 707.

+ **System 2:** Layer poultry at semi-commercial with minimal to moderate bio-security level. This system keeps regularly layer hens or ducks and parent hens, ducks or Muscovy ducks (MD) at semi-commercial scale using industrial feed. Parent hens are both confined and grazed in good facilities or personal fields while layer ducks and MD are popularly raised in area around villages or on rice fields. The layer hens are ISA Brown, Egypt and Ross 508. Layer ducks are raised in the rice fields for taking the residual paddy. There are about 500 birds per farm a year with a characterization of some races in the same farm.

+ **System 3:** Broiler poultry production at semi-commercial scale with low to minimal bio-security level. Most of farms in these sub-systems keep integrating many chickens and ducks in the same farm household. The local chickens and broiler ducks are freely grazed in a personal surface or transhumant on rice fields. The cross-bred broilers are popularly raised such as CV Super Meat and French MD. Most of broilers aren't vaccinated. The broilers are kept very intensive with many flocks per year with industrial feed. In average, there are only 1,130 broiler chickens and 1,600 broiler ducks per farm a year.

+ **System 4:** Village/backyard poultry production system with minimal bio-security level. This farming system has small investment; freely ranged poultry and farmers produces themselves old day chicks and its mostly local breeds. The head of birds are really limited with only 5 parent hens, 2 layer ducks, 60 broiler chickens and 35 broiler ducks per farm a year.

General characteristics of poultry production systems

There are 53% of household farms both raising chickens and ducks on the same surface (7). The broiler ducks are kept indoors in night time or free-grazed around the village. There are regular contact and interaction between birds of different households.

The semi-commercial poultry production was beginning on early 1990s, but integration production was only beginning on early 2000s. So the farmers' experience in the field of poultry production is only from 6 to 12 years. The average age of household heads is from 41 to 46 years old. Each household has 2 main objectives for keeping the poultry. One is to have poultry products to use in the family during the Tet festival or different celebrations. The other is to sell the rest poultry flock to have some monetary income. The poultry is not isolated from other domestic animals. The breeding duration is short with broiler ducks such as MD.

The implicit risks in poultry production

Source of day old chicks and ducklings (DOCs): Before the epidemic disease of AI on 2004, state enterprises and foreign enterprises were playing an important role for supplying DOCs to household farms. Therefore, the origin and the quality of DOCs were controlled. Since the AI in this time and government control measures against the AI, poultry egg incubation is limited or forbidden, while the demand in DOCs from breeders is really high by the lack of poultry meats on the market after each campaign against epidemic disease. Then, the explosion of private hatching incubator of poultry eggs keeps the production out of control of appropriate authorities.

70% of household farms who bought DOCs for laying as parental birds are from private hatching incubators. Thus the technical and scientific knowledge of breeders depend to the system of private incubatory farms. While AI risk is high in those private incubatory farms by the lack of control from authorities and parental poultry flock aren't vaccinated against the AI.

In addition, the resources of chicks depend largely on informal imports from China such as the races of chickens of Luong Phuong, ducks of Bau Canh Trang, layer ducks of Triet Giang, etc. The white chicks (industrial chickens) are principally supplied by the foreign enterprises such as CP Group Thailand, Japfa Indonesia and some state enterprises such as Luong My, DABACO.

Vaccination and the epidemic risks: The producers can only improve their knowledge by having accumulated experience, or through marketing campaigns of veterinary medicine enterprises. Most of the farmers don't know the name of vaccines against AI disease caused by H5N1 virus. The scientific knowledge of poultry breeders is still very limited. The sick adult poultry is mainly sold at low prices to consumers through intermediaries. The dead chicks and ducklings are thrown to public rivers, ponds or rice-fields. Finally, in the mind of breeders the use of antibiotics is popular in poultry production.

Only birds in system 1 and layer hens are vaccinated well by a strict schedule, while the layer ducks and French MD are regularly not vaccinated, especially during the layer period. The broiler ducks and the birds in the backyard system are not vaccinated.

The epidemic risks in poultry often happen from this year to another. Over 60% of households have encountered a problem with epidemic disease with significant poultry death rate. The French MD has often contracted an epidemic disease with up 70% of households.

Fluctuation risk of prices of inputs and outputs: The fluctuation of input and output prices concerning the poultry production is very high due to instability of these prices on the international market. The pinnacle of high fluctuation of prices is from 09 to 10/2008. The price of concentrated feed for broiler chicken and for broiler duck is 0.7\$/kg and 0.5\$/kg, respectively; and the price of maize is 0.3 \$/kg. From early 2009, the prices of feed decreased from 15%-20%, still higher than those before 2008.

The farmers will normally reduce their scale of animal production when the prices of feed increased and the prices of outputs such as broiler poultry and its products began decreasing. The prices of chicks reduced during 2008-09.

However, the prices of local broiler chickens and color chickens are usually kept stable, from 3.4 - 3.7 \$/kg with local chickens and from 1.8 - 2.1 \$/kg with color chickens through the price of broiler duck strongly decreased to 1.2\$/kg or a reduction rate of 25%. The fluctuation risk of prices of inputs and outputs strongly influenced on poultry production, resulting in unsustainable production.

Economic results in poultry production: Over 86% of birds of systems 1, 2 and 3 are sold to some small special poultry markets around the Hanoi City through intermediaries. The number of bird which reserves for the familial self-consumption demands in system 4 occupies up to 40%.

Economic results in these systems are very unsettled. The color reproductive hen production has a good economic performance (about 8.2 \$ per hen per cycle), but many layer ducks, reproductive MD and broiler ducks farms are not making profit due to the cause of epidemic disease and the great fluctuations of input and output prices in the poultry production. Many farms lost about 1,600\$ per year. Broiler poultry production at semi-commercial scale has a low economic result, with average is from 520 to 870\$ per farm a year. The net income from poultry production in the systems 1 & 2 occupies from 30% - 60% of total income of a household. While the net income from layer ducks in system 2, broiler poultry in system 2 and backyard system is about less than from 150 \$ to 200 \$ per farm a year, making up about 6.4%-8.3% of net income in a household.

Conclusions

The poultry production in this region is facing grave difficulties. The epidemic diseases in poultry are more or less due to lack of scientific knowledge of producers. The large fluctuations of prices of inputs, outputs are also important problems.

The quality of DOCs is not controlled. The economic results in these farming systems are very unsettled, the color reproductive hen production has a good economic performance but ducks, MD production are loss-making.

The observations mentioned above seem to be the main factors causing an unsustainable poultry production in this province. In order to have sustainable development in the next coming years, it is necessary to equip farmers with good scientific knowledge or good practical poultry production systems (HACCP) to farmers. The Government needs provide the useful information on regional and international poultry markets. Moreover, it is necessary to encourage the establishment of a network of poultry production with supply chains aided with good traceability systems to provide high quality poultry products.

Acknowledgement

This study was funded by the Program of Institutional University Cooperation between HUA and CIUF-Belgium.

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